ABSTRACT

The present invention relates to a light-waveform measuring device and its measuring method, a complex-refractive-index measuring device and its measuring method, and a computer-program recording medium having programs for the same stored therein. It is an object of the present invention to measure an electric field of an electromagnetic wave in a light region having wavelengths smaller than those of electromagnetic waves in a near-infrared region and output time-varying waveforms thereof. It is also an object of the present invention to enable easily obtaining a complex refractive index of a material, on the basis of the result of measurement of the electric-field waveform of light. The present invention comprises gate-pulse-light generating means, measurement-light generating means and light-detecting means for detecting measurement light, wherein both of gate pulse light and measurement light are coherent lights, the measurement light is coherent light having a wavelength smaller than those of a near-infrared region, the gate pulse light has a pulse width smaller than a period of the measurement light, the measurement light and the gate pulse light are directed to the light-detecting means to generate carriers therein, a physical quantity based on the carriers is measured, and an electric field of the measurement light is measured on the basis of the physical quantity.